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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,591

07/16/2007

Damian Fiolka

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EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2882

NOTIFICATION DATE

DELIVERY MODE

07/26/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/591,591	Applicant(s) FIOLKA ET AL.	
	Examiner Peter B. Kim	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-76 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 40-76 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/5/2006, 7/16/2007</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a plurality of the second electrodes separated from one another mounted on the second plate face as in claim 52 and a stress birefringent material and actuator of claim 61 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper content of an abstract of the disclosure.

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A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because abstract is directed only to a transmission filter apparatus when the claims are directed to an illumination system for a microlithography projection apparatus. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 40-50, 67-71, and 74-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boettinger et al. (Boettinger) (2003/0044701) in view of Oakley (6,545,968).

Boettinger discloses an illumination system for a microlithography projection exposure machine (Fig. 1) and for an exposure method for illuminating an illumination field with light from a primary light source comprising a pupil shaping unit (123), a transmission filter apparatus (140, 440, Fig. 1 and 4) for spatially dependent intensity filtering of an incident light distribution, the transmission filter apparatus being arranged at or in a vicinity of a pupil plane of the illumination system (Fig. 1) wherein the transmission filter apparatus includes at least one retardation device (480) to be operated in transmission to produce a spatially dependent retarding effect on the light of the incident light distribution, where the retardation device is configured to be driven to produce temporally variable, spatially dependent retarding effect (481a-481c, para 0030-0031). However, Boettinger does not disclose at least one polarization filter arranged in a light path downstream of the retardation device. Oakley discloses a transmission filter apparatus (Fig. 2) with polarization filter (106) located downstream of the retardation device (col. 4, line 12 – col. 5, line 31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the polarization filter of Oakley to the invention of Boettinger in order to produce a polarization which improves the image quality such as depth of focus and resolution. Boettinger in view of Oakley does not disclose the numerical aperture < 0.1 ; however, it would have been obvious to one of ordinary skill in the art to provide numerical aperture < 0.1 since it has been held that discovering optimum range or value involves only routine skill in the art. Boettinger discloses the retardation device comprising a cell arrangement having a plurality of cells (481 a-c) configured to be driven individually and independently of

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one another (para 0030, 0031). However, Boettinger does not disclose the cell arrangement comprising at least one nonlinear optical crystal producing a linear electro-optical effect. Oakley discloses in col. 4, line 49 - col. 5, line 31, cell arrangement comprising optical crystal producing a linear electro-optical effect. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the optical crystal of Oakley to the invention of Boettinger in order to produce a two-dimensional electrooptic modulator array.

Claims 51-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boettinger et al. (Boettinger) in view of Oakley as applied to claim 48 above, and further in view of Noonan (2004/0008397).

The further difference between the claimed invention and the modified Boettinger is the nonlinear optical crystal designed as a plane plate that completely covers the region of incident light distribution and has a first and second plate face wherein a plurality of first electrodes electrically separated from one another are mounted on the first plate face and a plurality of second electrode electrically separated from one another are mounted on the second plate face and the second plate face having a single second electrode to which the plurality of first electrodes are assigned. Noonan discloses in Fig. 1, an electro-optic modulator comprising a plane plate that completely covers the region of incident light distribution (Fig. 1) and has a first and second plate face (11 and 21) wherein a plurality of first electrodes (11a) electrically separated from one another (Fig. 1) on the first plate face and the second plate face having a single second electrode (21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the first and second electrodes of Noonan to the

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invention of Boettinger in order to provide a fast retardation device a spatially dependent retarding effect. Although Boettinger in view of Oakely and Noonan does not disclose the second plate face having a plurality of second electrode separated from one another, it would have been obvious to one of ordinary skill in the art to provide a plurality of electrodes since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art.

Claims 61-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boettinger et al. (Boettinger) in view of Oakley as applied to claim 40 above, and further in view of Brunotte et al. (Brunotte) (WO 02/093257 provide in IDS filed on July 16, 2007 and using U.S. publication of its continuation, 2004/0150806 as a translation).

The further difference between the claimed invention and the modified Boettinger is a stress birefringent material and a stressing device having at least one actuator acting on the retardation element. Brunotte discloses stress birefringent material (144) and actuators (151-153) acting on the birefringent material (para 0083). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the stress birefringent material and actuators acting on the material to the invention of Boettinger in order to control the retardation element.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/
Primary Examiner, Art Unit 2882

July 18, 2010